

izing the ova of ripe forms captured in the trawl, and returning them to the sea, an idea which originated with the Americans in regard to the cod. Little training would really be necessary for this, since the skippers of trawling-vessels and not a few line-fishermen in Scotland readily and successfully carry out artificial fertilization.

The plates attached to the work are eighteen in number, and of these twelve are coloured. Certainly no expense has been spared in regard to the first nine—the work of an accomplished artist, Miss Willis. A smaller number of coloured figures of the common sole perhaps might have sufficed. In the structural figures great care has been exercised by the author, though the effect after lithographing is sometimes a little harsh, *e. g.* in plates x. and xii. Some of the figures in the last three plates (done in Jena) are very neat, though there are a few small structural omissions, such as the absence of the hypural and epidual elements in the transparent tails of the young flounders in pl. xvii. fig. 5 and pl. xviii. fig. 1.

In the preparation of this treatise the author has had to consult popular favour and at the same time promote the advancement of science. On the whole he has accomplished his task with much perseverance and ability; and though there are omissions of moment and a tendency to take somewhat limited views of various questions, still the work is creditable and noteworthy both in regard to the fisheries and zoology.

W. C. M.

A Zoological Pocket-Book, or Synopsis of Animal Classification. By Dr. EMIL SELENKA and J. R. AINSWORTH DAVIS. Charles Griffin & Co.: London, 1890.

THIS is a translation by Mr. Ainsworth Davis of the third edition of Dr. Selenka's 'Zoological Pocket-Book.' It consists of a series of classificatory schedules, comprising definitions of the phyla, classes, and orders of the animal kingdom, together with explanatory remarks and tables. At the end of the book Mr. Davis has added some useful "Notes on Distribution," and also a table showing the "Geological Range of the chief Animal Groups." The book is interleaved with blank paper for the reception of brief synopses of "voluminous lecture-notes, or, in some cases, definitions of families and smaller subdivisions." The size of the book (small octavo) renders it an extremely handy little volume, and different-sized type is usefully employed in order to emphasize the various classificatory divisions. The book is, of course, intended for students, but its value will largely depend upon the way in which it is used. Thus, for a "short-course" man, struggling with the anatomy of his half-dozen types, schedules such as these would scarcely be necessary, and, if used, would probably be productive of much confusion. The more advanced student, on the other hand, who has received a good general grounding in zoology, will be certain to find this little book of much assistance in preparing for examination. In the face of

the enormous amount of original work now being done in science, it may seem a heresy to assert that the days of learning for learning's sake are over. Such is nevertheless the melancholy fact, the result of the modern struggle for existence and competitive examinations. For the vast majority of mankind education has become simply a means to an end, which is bread-and-butter. Were it not so we should be inclined to consider these schedules superfluous, and to hold it far better for the student that he should be able to tabulate his knowledge for himself. As it is, any labour-saving appliance, anything which renders the passing of examinations easier, is for the good of the student, and for the sake of the student we welcome this book.

The book consists of some two hundred and thirty pages, blank leaves included, though not numbered. As they are intended to be used, it would have been far better if they had been. The first ten pages are devoted to the Protozoa. We then come to a genealogical tree, intended to exhibit the probable phylogenetic connexion of the various classes of the Metazoa. This shows most of the orders usually included under the comprehensive title "Vermes," distributed along the various branches; while in the centre we find the word "Vermes" printed in large type and apparently springing from nowhere, though the Chordata are shown as springing from it. The result is somewhat confusing. On the next page we have a table likely to be of greater value to the student, as it exhibits the chief typical differences in the reproductive, blood-vascular, nervous, and other systems of the Metazoan phyla. Another very useful table exhibits the chief facts in the life-histories of the most important parasitic Trematodes and Cestodes and other parasitic Worms. With the exception of the last ten pages the rest of the book is devoted to classificatory schedules, giving brief definitions of the phyla, classes, and orders, illustrated with the names of and notes on the more interesting and typical genera and species. We believe that the experience of college tutors and others has shown that schedules such as these are of much use to candidates for honours in natural science; and these schedules appear to us to be well done. Certain minor inaccuracies, however, have caught our eye. For instance, since the nephridia of Rotifera commence with flame-cells, it is wrong to speak of the excretory tubes as "opening into an archicœlic body-cavity." Again, the female gnat does not "*sting*"; we might as well apply the term to the cobra. Since the test of the Ascidian, one genus excepted, is chiefly cellulose, it is not enough to define it as of a "gelatinous or cartilaginous nature." In the Reptilia-schedule, besides stating that *Hatteria* has "biconcave vertebræ and no copulatory organs," mention might have been made of the ossification of the quadrato-jugal cartilage, seeing that it is a feature found in no other recent lizard. To speak of *Coronella austriaca*, the English smooth snake, as the "smooth viper," is misleading, to say the least of it. The last ten pages of the book are devoted to some Notes on Distribution and a table showing the "Geological Range of the chief Animal Groups." In the latter Mr. Davis has attempted to do

too much in so small a space. The Notes on Distribution are stated by Mr. Davis to have been mainly prepared from Wallace. They contain a mass of facts in a very small compass, and by their aid the intelligent student will, with the minimum of trouble to himself, be able to "get up" several general questions which the hearts of examiners in zoology love. Nevertheless we should much like to have Mr. Davis's reasons for including the lion among the species peculiar to the Ethiopian Region.

MISCELLANEOUS.

Is Asterias tenuispina, Lamk., a British Species?

IN reply to Prof. Jeffrey Bell's inquiry (p. 424) I should say most certainly that *Asterias tenuispina*, Lamk., is *not* British. I have never seen or heard of an authentic specimen. It is true, as Prof. Jeffrey Bell remarks, that Gray in his 'Synopsis' writes "Inhab. British coast, Mediterranean;" but upon what evidence is this assertion made? I conclude upon a synonym he gives, "*Ast. spinosa*, Pennant." What, then, has Pennant to say?—" *Ast.* with *five* rays of almost equal thickness, beset with numerous spines." *Five* will not do for *A. tenuispina*. Moreover, Pennant does not appear to have seen the form himself. He gives two references—one to Borlase's 'Cornwall,' tab. xxv. fig. 18, the other to Linck, tab. iv. no. 7. Borlase is not in my library, but a reference to Linck shows a figure of a five-rayed starfish, certainly not *A. tenuispina*, of which he writes:—"Vivæ sunt subcæruleæ. Ejusdem speciei duplo majores se invenisse fatetur, primum in Oceano occidentali Hybernico, post juxta Pensans in Cornubio." Here seems to be the origin of Gray's mistaken statement that *Asterias tenuispina* is found on our coast. Linck's figure and his words "Vivæ sunt subcæruleæ" appear to me conclusively to prove that the starfish which he called *Pentadactylosaster spinosus regularis* was a small specimen of *A. glacialis*.

Asterias tenuispina, Lamarck, has six to eight arms and is a littoral form. Such a distinct species could scarcely have evaded discovery if it occurred on our shores. It is a well-known Mediterranean Asterid, which would appear to have had a southern origin. It is said to have occurred in the Madeiran, Canary*, and Cape-Verd Islands, and in the Florida Sea (*Ludvig*); and also at Bermuda, Abrolhos, Mauritius, Java, Molucca, Australia, and Hong Kong (*Perrier*). In the Mediterranean it is recorded from many places on the Italian and Sicilian coasts and in the Adriatic. My own specimens are from Naples (*Staz. Zool.*) and Mahon, Spain (*Señor Pedro Antiga*), this last being the only known occurrence of the species in the western Mediterranean; but Quatrefages records it much further

* It is figured by d'Orbigny from the Canaries, Webb and Berthelot, Hist. Nat. des Iles Canaries, Échinodermes, pl. iii. figs. 14-20.